

**REMARKS**

The amendments and remarks presented herein are believed to be fully responsive to the Office Action.

Claims 1-9, 11 and 13-15 are pending in the present application. Claims 7-9 and 13-15 are allowed. Claims 1-6 and 11 stand rejected. Claim 11 has been cancelled, without prejudice. No new matter has been added. The independent claims recited by the present application are claims 1 and 7.

**CLAIM REJECTIONS:**

**A. Claim Rejections under 35 U.S.C. § 112**

The Office Action notes that claim 11 is indefinite for failing to particularly point out and distinctly claim the subject matter. Applicant respectfully cancels claim 11, without prejudice. As such, the rejection thereof is moot.

**B. Claim Rejection under 35 U.S.C. § 103**

The Office Action states that claims 1-6 stand rejected under 35 U.S.C. 103(a), as being unpatentable over Nobuyuki et al. (Japanese Patent No. H10-084159) (hereinafter "Nobuyuki et al.") as modified by Edmond et al. (US 5,338,944) (hereinafter "Edmond et al.") and further in view of Sung et al. (U.S. 2002/0179918) (hereinafter "Sung et al.).

The rejections are respectfully traversed.

*Claim 1*

With regard to claim 1, the Office Action reiterates:

Nobuyuki et al. differ from the claimed invention by not comprising the SiC layer having an n-type conductivity and a thickness of 5 to 500 Å for the holes to be injected into the p-type III-nitride semiconductor layer by tunneling.

Edmond et al. disclose a SiC semiconductor light emitting device (Fig. 3) comprising a top SiC contact layer (56) having an n-type conductivity (col. 6, lines 67-68 and col. 7, lines 6-8) to take advantage of greater conductivity and optical characteristics of n-type SiC layer (col. 7, lines 10-12).

In the previous Amendment A, Applicant asserted that even the combined LED structure taught by Nobuyuki et al. and Edmond et al. does not teach or suggest the LED structure recited in Claim 1 of the present invention. Applicant further asserted that neither Nobuyuki et al. nor Edmond et al. teaches or suggests why the p-type SiC capping layer disclosed in Nobuyuki et al. is replaced with only the n-type SiC layer 56 in Fig. 3 of the degenerate junction structure disclosed by Edmond et al.

In response to the Applicant's argument, the Office Action states:

Examiner did not suggest that the p-type SiC capping layer 109 disclosed by Nobuyuki et al. is replaced with only the n-type SiC layer 56 disclosed by Edmond et al., but suggested that the n-type SiC layer 56 disclosed by Edmond et al. can be formed on the p-type SiC contact layer 109 disclosed by Nobuyuki et al. to make a p-side contact layer structure similar to the composite layer 57 and 56 disclosed by Edmond et al.

Nobuyuki et al. discloses the p-type SiC capping layer 109 applied to the conventional LED which has the p-type GaN as a top layer to lower the driving voltage as shown in Fig. 14 thereof. Even assuming, for the sake of argument, that the combined LED structure taught by Edmond et al. and Nobuyuki et al. could teach or suggest the n-type SiC layer 56, disclosed by Edmond et al., formed on the p-type SiC contact layer 109 disclosed by Nobuyuki et al., the

combined structure cannot teach or suggest the claimed invention of the present application.

Since both Silicon (S) and Carbon (C) of the silicon carbide (SiC) are subject to Group IV, the combined LED structure allegedly taught by Edmond et al. and Nobuyuki et al. could teach or suggest the n-type SiC layer formed on the p-type SiC layer that is a group IV semiconductor containing carbon as a constituent element. Whereas, the claimed invention recites “a  $\text{Si}_a\text{C}_b\text{N}_c$  ( $a \geq 0, b > 0, c \geq 0, a+c > 0$ ) layer **grown on the p-type III-nitride semiconductor layer**, the  $\text{Si}_a\text{C}_b\text{N}_c$ , ( $a \geq 0, b > 0, c \geq 0, a+c > 0$ ) layer having an n-type conductivity...”. (Emphasis added). As such, both Edmond et al. and Nobuyuki et al. fail to teach or suggest the n-type SiC layer grown on the p-type III-nitride semiconductor layer (as compared to the p-type IV group semiconductor) as recited in claim 1 of the present application and the combined LED structure allegedly taught by Edmond et al. and Nobuyuki et al. still fails to remedy the deficiencies of Nobuyuki in teaching all the elements and limitations of the claims of the present invention. Neither Edmond et al. nor Nobuyuki et al. nor their combination disclose or teach all the elements and limitations of the claims of the present invention.

It is respectfully requested that the Patent Office reconsider and withdraw the rejections of the claims for the reasons stated above.

#### *Claims 2-6*

Claims 2-6 depend from independent claim 1 and, as such, are in allowable condition since claim 1 is clearly allowable over the cited prior art.

As such, Applicant respectfully asserts that claim 1 and claims 2-6 depending therefrom are now in condition for allowance.

Application of: Tae-Kyung Yoo  
Serial No.: 10/544,271  
Amendment B

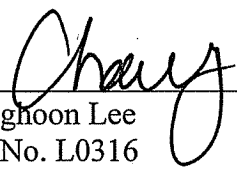
In light of the aforementioned amendments and discussion, Applicant respectfully submits that the application is now in condition for allowance.

If any issue regarding the allowability of any of the pending claims in the present application could be readily resolved, or if other action could be taken to further advance this application such as an Examiner's amendment, or if the Examiner should have any questions regarding the present amendment, it is respectfully requested that the Examiner please telephone Applicant's undersigned attorney in this regard.

Respectfully submitted,

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